

Gender Difference in Frequency of Conventional Risk Factors in Patients with Acute Coronary Syndrome Admitted in Manipal Teaching Hospital, Pokhara, Nepal

Parajuli M,^{1*} Maskey A,¹ Kohli S C,¹ Shrestha UK¹

¹Department of Medicine, Manipal Teaching Hospital, MCOMS, Pokhara, Nepal

ABSTRACT

Background: Acute coronary syndrome (ACS) is the major manifestation of coronary artery disease (CAD), which is a major killer of mankind. The modifiable risk factors for CAD may have different impact on men and women, which may also differ in different population groups. Identification and control of conventional risk factors is expected to result in a decline in incidence of CAD similar to that seen in western industrialized countries.

Method: A retrospective study of 232 consecutive patients admitted to Manipal Teaching Hospital, Pokhara between September 2009 to December 2010 by studying their hospital records for following conventional risk factors of CAD viz Body mass index, current cigarette smoking, hypertension, excessive alcohol use, diabetes mellitus and dyslipidemia. The results were analyzed by SPSS 16.

Results: The important modifiable risk factors in order of descending frequency were high BMI, smoking, hypertension, excessive alcohol use, raised total cholesterol, raised triglyceride and diabetes mellitus. Smoking and excessive use of alcohol were seen in statistically significant higher percentage of cases in males. Our study further revealed that in females, unstable angina whereas in males ST elevation myocardial infarction (STEMI) was present in statistically significant higher number of cases.

Conclusion: Our study showed a statistically significant higher incidence of smoking and excessive alcohol use as risk factors for ACS in males. It was also seen that in females unstable angina and in males STEMI was present in statistically significant higher number of cases.

Keywords: Acute coronary syndrome; Coronary artery disease; gender difference; risk factor

*Corresponding Author:

Dr. Madhav Parajuli
Lecturer, Department of Medicine
Manipal Teaching Hospital, MCOMS, Pokhara, Nepal
Email: madhavparajuli52@yahoo.com

Citation

Parajuli M, Maskey A, Kohli SC, Shrestha UK. Gender difference in conventional risk factors in patients with acute coronary syndrome admitted in Manipal Teaching Hospital. *Nepal Journal of Medical Sciences*. 2012; 1(1): 31-34.

Background:

Identification and control of modifiable risk factors has been the hallmark of success in reducing the incidence of coronary artery disease. The result of various studies has shown gender differences for the impact of different modifiable risk factors in males and females.¹⁻³ The relative importance of modifiable risk factors may also vary in different population groups in males and females. In view of geographical and cultural diversity of Nepali

population, the relative impact of modifiable coronary artery disease (CAD) risk factors is also expected to differ in different population groups of the country. There are only limited studies on the subject of gender differences in CAD risk factors in patients with acute coronary syndrome (ACS) in Nepal. This study has been undertaken to evaluate the differences between men and women of the impact of various conventional CAD risk factors in patients presenting with ACS to Manipal Teaching Hospital, Pokhara located in western region of Nepal.

Methods:

A hospital based cross sectional retrospective study of consecutive 232 patients admitted to Manipal Teaching Hospital, Pokhara between September 2009 to December 2010 by analyzing their hospital records. Risk factors profile in males and females were studied separately. The cases were categorized as unstable angina, non ST elevation myocardial infarction (NSTEMI) and ST elevation myocardial infarction (STEMI) as per ACC/ AHA guidelines.

The following conventional risk factors were studied in male and female groups. Body mass index (BMI) > 25kg/m², current cigarette smoking (>5 years), hypertension (history / treatment of hypertension in past or blood pressure ≥ 140/90mm of Hg, excessive alcohol use (> 500 ml home made alcohol for more than 5 years), diabetes mellitus (history / treatment of diabetes mellitus) and dyslipidemia (triglyceride> 170 mg%, total cholesterol >200 mg%, LDL cholesterol >165 mg%, HDL cholesterol < 30 mg%). Family history of CAD was not reliable and was therefore excluded from the study.

The following investigations were done in all the cases. Twelve lead electrocardiogram, blood troponins, CK MB, random blood sugar (fasting and post prandial in selected cases), fasting lipid profile, blood electrolytes, urea, creatinine, urine routine and microscopic examination. The result were recorded as per set proforma and analyzed by using SPSS 16.

Results:

There were 232 patients included in the study of which 120 were males and 112 were females. The mean age of CAD was 63.5 years being 62.7 and 64.4 years in males and females respectively. The important modifiable risk factors in order of descending frequency were high BMI, smoking, hypertension, excessive alcohol use, raised total cholesterol, raised triglyceride and diabetes mellitus. Raised LDL cholesterol and low HDL cholesterol were seen in negligible number of cases.

Smoking and excessive use of alcohol were statistically significant risk factors in males. Further, it showed that in females, unstable angina while in males STEMI was present in statistically significant higher number of cases.

Table 1: Age group distribution of case

Mean age in males	Mean age in females	T value	P value	95% CI
62.7 (± 20.9)	64.4 (± 20)	0.63	0.528	-6.99- 3.59

Degree of freedom (df)= 230

Table 2: Case distribution of Acute Coronary syndrome subtypes males and females

Acute coronary syndrome	Male	Female	Chi value	P value
Unstable angina	31	48	6.73	0.009
NSTEMI	16	25	2.62	0.105
STEMI	73	39	14.67	>0.001

Degree of freedom (df)= 1

Table 3: Distribution and gender comparison of modifiable risk factors

Risk Factors	Total	Gender comparison		P value
		Male (%)	Female (%)	
High BMI	150 (64.6)	81 (67.5)	69 (61.6)	0.164
Smoking	128 (55.2)	75 (62.5)	53 (47.3)	0.005
Hypertension	98 (42)	47 (39.2)	51 (45.5)	0.567
Excess alcohol use	71 (30.6)	54 (45)	17 (15.1)	>0.001
Raised total cholesterol	45(19.4)	24 (20.7)	21 (18.7)	0.526
Raised triglyceride	34 (14.7)	20 (16.7)	14 (12.5)	0.139
Diabetes Mellitus	25 (10.8)	15 (12.5)	10 (8.9)	0.149
Raised LDL	4(1.7)	2 (1.7)	2 (1.8)	1.000
Low HDL	1 (0.4)	1 (0.8)	0	1.000

Discussion:

There are limited studies on the subject of prevalence of CAD risk factors in Nepali population. Vaidya et al⁴ in their first population based cross sectional study on prevalence of CAD in the urban adult males of eastern Nepal found tobacco use, history of hypertension, family history and the age to be the important risk factors.

The mean age of Coronary artery disease in our study is 63.5 years which is comparable to another study in western Nepal by Paudel et al⁵ in which mean age of presentation was 64.2 years. Butt et al¹ in their study of ACS patients in Pakistan too did not find significant difference in mean ages of ACS patients in males and females. The mean age in males was 62.7 years while in female was 64.4 years in our study. The mean ages of ACS of 53.1 and 53.7 years in males and females respectively were significantly lower than reported in Nepali study as compared to our study. This may be due to

changing trend in occurrence of CAD in older age in Nepali population. However further studies are needed to confirm the above findings.

Prevalence of CAD has been reported to be higher in males than females in most of the study.² Maskey et al⁶, in their analysis of a ten years data of Teaching hospital, CAD patients reported 74 % patients to be the males while only 26 % females. In contrast to findings of above studies the results of our studies show that 51.7 % of ACS patients were males and 48.2 % were females. Although ACS was higher in males than females, the male to female ratio was very narrow. This may be indicative of rising trend of ACS in female patients and warrant further studies. The findings of our study showed that there were statistically significant higher percentage of cases of unstable angina in females while STEMI predominated in males. This is in agreement with results of a previous study in Nepal.⁶

High body mass index was most common risk factor seen in 64.6 % of cases and was prevalent in almost equal frequency in males and females. Similar findings were reported by Castanho et al³ in Brazilian population. Demosthenes et al in the Greek study in hospitalized patients of ACS reported higher percentage of female obese patients than males.⁷

Smoking was found to be next major risk factors being present in 55.1% of cases. Maskey et al⁶ reported 82% of the CAD patients in their series to be smokers while Fuster et. al⁸ reported smoking to be present in 30.9 % of CAD patients.

Gender analysis of risk showed that it was present 62.5% of the males and 47.3% of the female patients. The higher prevalence of smoking in males observed in our series is statistically significant. Similar higher prevalence of smoking was reported in other series.^{1,3,7}

Hypertension emerged to be next important risk factors in our series and was seen in 42% of cases which is comparable to figure of 40% seen in a Nepali series reported by Maskey et al.⁶ A lower prevalence of hypertension was reported by Yadav et al⁹ and Fuster et al⁸ being present in 33% and 18.2 % of cases respectively in their series. The gender difference in prevalence of hypertension in our series was not statistically significant.

Excessive alcohol use as a risk factor was seen in 30.6 % of cases of ACS on our series. It was far more prevalent in males (45 %) than females (15.1 %). The difference was statistically significant. Heavy alcohol use in males was also observed in CARDIO 2000 study.¹⁰

Raised total cholesterol was seen in 19.4 % of cases in

our series. The difference in males and females was not statistically significant. Similar findings in males and females were reported by Butt et al¹ in their study.

Raised triglyceride levels were seen in 14.7% of our patients and the gender difference of its frequency in males and females was not statistically significant. Maskey et al⁶ reported a figure of 10% in their series.

Diabetes mellitus was present in 10.8% of cases in our series, being 12.5% in males and 8 % in females. The difference was not statistically significant. In the series reported by Maskey et al⁶ in Nepal, diabetes mellitus was present in 20% of the cases. In a study reported by Butt et al¹ from Pakistan, there were statistically significant higher percentage of cases of diabetes mellitus, being 60.6 % and 31.3% in females and males respectively.

Apart from the lower percentage of cases of diabetes mellitus in our series raised LDL cholesterol and low HDL cholesterol were seen in negligible number of cases which need to be substantiated by further larger study.

Conclusion:

Gender comparison of risk factors has shown a statistically significant higher incidence of smoking and excessive alcohol use in males in our series. A rising trend of ACS in females has been observed in our study. The mean age of ACS did not differ significantly in males and females. Unstable angina and NSTEMI predominated in females while ST elevation myocardial infraction predominated in males. No statistically significant gender difference was observed as far as other risk factors were concerned. Other notable findings observed in our series were comparative lower incidence of diabetes mellitus, negligible number of cases with raised LDL cholesterol and low HDL cholesterol which warrant further studies.

References:

1. Butt Z, Shahbag U, Hashmi AT, et al. Frequency of conventional risk factors in patients with acute coronary syndrome in males and females. ANNALS 2010;16:55-8.
2. Barnett CE. Sex differences in coronary heart disease, why women are so superior? The 1995 Ancel Keys lecture. Circulation 1997;95:252-64.
3. Castanho VS, Oliveira LS, Pinheiro HP, et al. Sex difference in risk factors for coronary heart disease: a study in a Brazilian population. BMC Public health.2001;1:3.

4. Vaidya A, Pokhrel PK, Nagesh S, et al. Prevalence of coronary heart disease in urban adult males of eastern Nepal: A population based analytical cross sectional study. *Indian heart journal*. 2009;61:311-7.
5. Paudel B, Paudel R, Maskey A, et al. A study of acute coronary syndrome in Western region of Nepal. *Journal of Gandaki Medical College* 2009;2:51-9.
6. Maskey A, Sayami A, Pandey MP. Coronary artery disease: An emerging epidemic in Nepal. *J Nep Med Assoc* 2003;42:122-4.
7. Demosthenes B, Panagiotakos, Christos P, et al. Sex-related characteristics in hospitalized patients with acute coronary syndromes--the Greek Study of Acute Coronary Syndromes. *Heart and Vessels* 2007;22:9-15.
8. Fuster V, Peasoo TA. 27 Bethesda conference. Matching the intensity of risk factors management with the hazard of coronary artery disease events. *J Am collcardiol* 1996;27:957-1047.
9. Yadav P, Joseph D, Joshi P, et al. Clinical profile and risk factors in acute coronary syndrome. *National journal of community medicine* 2010;1:150-2.
10. Christina B, Chrysohoov MD, Demosthenes B, et al. Gender difference of the risk evaluation of acute coronary syndrome: the CARDIO 2000 study. *Prev Cardiol* 2003;6:71-7.